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**Subject:** FW: EPA comments on the Draft RI for the Skeet Range at Alameda

skeet.epa.wpd

-----Original Message-----
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Sent: Tuesday, May 13, 2003 5:44 PM
To: McClelland, Michael E (EFDSW); jch@rb2.swrcb.ca.gov;
mliao@dtsc.ca.gov; Dick, Andrew E (EFDSW); Lea Loizos
Subject: EPA comments on the Draft RI for the Skeet Range at Alameda

Hi Mike and Andrew, here are our comments on the Draft RI for the Skeet Range in a WordPerfect file.

Sorry about being so late, but I really struggled trying to correlate your probabilistic model and weak TRV derivation to a real world risk. I never did get comfortable coming to a decision about either accepting or rejecting the No Further Action recommendation, and I couldn't find a biologist willing to committ either. So we'll wait to see the Regional Board's comments, as they have more experience with skeet ranges around the bay, and also for the Navy's response to comments.

(See attached file: skeet.epa.wpd)

# EPA Comments on the Draft RI for the Skeet Range at Alameda Point

## General Comments

1. Section 3 should probably be called Nature and Extent of Contamination, with a sub-section on Source of Contamination. This chapter should include data on the number of lead pellets per area, rather than just pellets per liter of mud, as a precursor to the data presented in Table 4-11.

2. Section 5.3 states that access to the site is currently limited because of UXO and radium along the edges of Site 1. Section 3 should include a sub-section mentioning this and discussing whether any radium or UXO is found on-shore at the Skeet Range, and also discuss whether any other surface or groundwater contamination could have migrated from Site 1. If these other contaminants may be present onshore at the Trap and Skeet Range, then they must be included in the Human Health Risk Assessment.

3. The binomial probability analysis involves the use of many hard to estimate input parameters. Thus, the discussion of risk is mostly based on the

variability of the scenarios, with the conclusions presented in terms of percentage of scenarios that had acceptable risks. The resulting conclusion in Section 4.2.5 that the population risk was acceptable in over 80% of the scenarios is thus based on the number of calculations, not on any physical conditions. Could this have been done in a more straightforward way, perhaps just taking the weighted 'P' from Table 4-11 multiplied by the site use factor (SUF) to come up with the fraction of gizzard grit that is lead shot. This would remove several hard-to-define parameters from the analysis and make the variability of the SUF much more evident.

4. The Report speculates that "*Ampelisca* mats" decrease the availability of contaminants by preventing food chain transfer to fish. Additional support is needed for this contention because the Report (page 61) states that *Ampelisca* may serve as prey for fish and benthic feeding birds, and lead shot is present in the top 5 centimeter (cm) of sediment in half of all sediment samples (page 66), within the depth at which fish and birds would likely be foraging. Additionally, the Report states that *Ampelisca* were present in "the majority" of sediment samples, but does not discuss the density or depth of lead shot at

locations lacking thick *Ampelisca* mats. Also, there is no discussion of whether the mats exist at other areas where birds may forage for grit. Since the Navy's interpretation of the results of the ERA relies substantially on the contention that lead shot is not generally available to fish and benthic feeding birds, the Report should include additional discussion of the areal extent of Ampelisca mats and the presence of lead shot in the top 5 cm of sediment.

**Specific Comments**

1. Section 1.1.1, Site Description, Pages 1 and 2 and Figure 1-2: The location of the skeet range is not shown on Figure 1-2, so it is difficult to compare the figure with the description in the text. For example, the text states that the depth of water ranges "from <5 ft (<1.5 m) to about 12 ft (3.7 m)," but the depth with in 800 feet of shore is greater than 15 feet in the southern part of Figure 1-2. Since the location of the skeet range is vague, it is unclear if the deeper portions are included within the boundaries of the range. Please delineate the location of the Skeet Range on Figure 1-2.

2. Section 1.1.1, Site Description and Physical Setting, Page 2: The text on page 2 states: "Percent fines increases with increasing distance from the shore," but a comparison of Table 1-1 with the locations plotted on Figure 1-4 reveals that the distribution of percent fines is more random than this statement appears to imply. For example, SR006 is located much closer to shore than SKB012, but SR006 contains more fines (86.7 percent) than SKB012, which contains 82.6 percent fines. Similar problems were noted when the percent fines was plotted for other stations. Please revise or remove the statement.

3. Section 1.1.3.1, 1996 OU4 Ecological Risk Assessment, Page 5 and Figure 1-4: The text states that "grab samples were collected every 45 feet along 5 transects (A through E) covering an angle of 90 degrees outward from the shoot range (Figure 1-4)," but there are 10 transects, not 5, on Figure 1-4 and none of them are labeled. Please label the transects on Figure 1-4 and clarify the number of transects in the text.

4. Section 1.1.3.1, 1996 OU4 Ecological Risk Assessment, Page 5: The text describes the development of a series of arcs that represent three areas of different shot density but does not include a figure or describe where the shot density was the greatest. Please provide a figure that shows the arcs and the areas where the shot density was

greatest.

5. Section 3.1.1, Sediment Chemistry, Page 37: The text indicates that the three Stations where concentrations of high molecular weight PAHs (HPAHs) and/or low molecular weight PAHs (LPAHs) were detected above the effects range-low values (ER-Ls) are located along the northern edge of the Skeet Range. However, these three Stations (SK-04, SK-06, and SK-11) appear to be located in the northern half of the Skeet Range, but are located along the eastern edge of the area that was sampled, not along the northern edge. This is significant because the text later suggests that the contamination from the Oakland Inner Harbor, located north of the Skeet Range, may have impacted these three Stations. Please revise the text to accurately describe the location of these three Stations.

6. Section 3.1.1, Sediment Chemistry, Page 40: The text indicates that through analysis of polynuclear aromatic hydrocarbons (PAHs) it was observed that PAHs are distributed relatively uniformly throughout the sediment depth (particularly within the upper 20 cm). However, a review of Appendix A reveals that this statement does not reflect the actual distribution of analytical results for PAHs. For example, extremely high concentrations of PAHs were detected at Station SK-1 from 45 to 100 cm. However, concentrations of PAHs in shallower depths at this same Station, while still above ER-Ls, were not nearly as high. Furthermore, concentrations of PAHs detected at Station SK-11 were above ER-Ls mainly in the 15 to 20 cm depth range. However, at Station SK-21, PAHs were found at concentrations above ER-Ls mainly in the 5 to 10 cm depth range. Additionally, the majority of the cores were only extended to 20 cm, so it is not possible to determine whether PAHs are distributed uniformly over depth. It appears that the distribution of PAHs is sporadic both laterally and vertically. Therefore, because not enough evidence exists to draw the conclusion that PAHs are distributed relatively uniformly throughout the sediment depth, please revise the statement about PAH distribution on page 40 and wherever else it occurs throughout the document.

7. Section 3.1.1, Sediment Chemistry, Page 40: Analytical results for individual PAHs are not discussed in this section. Appendix A includes graphical data that indicates that the ecological screening criteria were exceeded for fifteen PAHs. Please discuss PAHs individually in this section and include which analytes were detected at concentrations above their ER-Ls and where and at what depth these detections were located.

8. Figure 3-3 Lead Shot Density from 0-5 cm Depth in 2-4mm Sieve, Page 41 and Table A-4: It is unclear how the lead shot density was obtained at SK-19 as presented on Figure 3.3. The figure indicates that the density was obtained by analysis of the grab sampling performed in 1996. However, Table A-4 only presents lead shot density for the core collected at SK-19. Additionally, the lead shot density differs between the text ("highest density," assumed to be 51-115 shot/liter,[shot/l]), figure (31-50 shot/l) and table (66.6 shot/l) for the 0-5 cm depth. Please resolve these discrepancies.

9. Section 3.1.2, Lead Shot Density, Page 40: There is a discrepancy in the lead shot density

detected at SK-46 between the text, the analytical data presented on Figure 3-3 and Appendix A The text indicates that the lead shot density at this location was between 51 and 115 shot/l. However, Figure 3-3 and Appendix A indicate that the lead shot density at this location was 46.5 shot/l. Please resolve this discrepancy.

10. Figure 3-3, Lead Shot Density from 0-5 cm Depth in 2-4 mm Sieve, Page 41: There is a discrepancy between the lead shot density at SK-19 presented on Figure 3-3 and the lead shot density at SK-19 in Appendix A. Figure 3-3 depicts the lead shot density at SK-19 to be within the range of 31 to 50 shot/l. However, on page A-86 in Appendix A, Table A-4, the lead shot density in the 2-4 mm sieve at SK-19 is 51.80 shot/l and 59.20 shot/l in the duplicate. On page A-94, the lead shot density in the 0.5 to 2 mm sieve was 14.8 shot/l and in the duplicate, 7.4 shot/l. Please revise the figure to reflect the correct concentration.

11. Figure 3-3, Lead Shot Density from 0-5 cm Depth in 2-4 mm Sieve, Page 41: There is a discrepancy between Figure 3-3 and Table A-4, Appendix A regarding lead shot density at SK-42. The lead shot density at SK-42, as presented on Figure 3-3, is between 11 and 30 shot/l. However, Table A-4 in Appendix A on page A-91 indicates that the lead shot density at SK-42 is 32.08 shot/l. Please revise the figure.

12. Figure 3-6, Lead Shot Density from 15-20 cm Depth in 2-4 mm Sieve, Page 44: There is a discrepancy between Figure 3-6 and Table A-4 Appendix A regarding lead shot density at SK-25. The lead shot density at SK-25, as presented on Figure 3-6, is between 1 and 10 shot/l. However, Table A-4 in Appendix A on pages A-86 and A-87 indicates that the lead shot density from the 2-4 mm sieve at SK-25 is 7.40 shot/l and 17.27 shot/l in the duplicate. In the 0.5-2mm sieve, 9.87 shot/l were counted in the sample and 22.2 shot/l in the duplicate. Please revise the figure to include the greater density detected in the duplicate.

13. Section 3.1.2, Lead Shot, Page 45: There appears to be a discrepancy between the text and Figures 3-3 through 3-6. The text on page 45 states that "a majority of the samples contained increasing lead shot density with depth." However, Figures 3-3 through 3-6 and the data in Table A-4 appear to indicate otherwise. At some locations, the density of shot decreases with depth. Sediment collected from SK-15 and SK-10 appears to have fairly consistent amount of lead shot throughout the core. Duplicate cores do not necessarily have the same pattern. The table below was created by adding the shot densities from the different sieve sizes for the same depth interval from 10 stations:

| Location | shot density at 0-5 cm (shot/l) | shot density at 5-10 cm (shot/l) | shot density at 10-15 cm (shot/l) | shot density at 15-20 cm (shot/l) |
|---|---|---|---|---|
| SK-3 | 2.47 | 4.97 | 44.40 | 86.34 |
| SK-7 | 14.80 | 76.47 | 22.20 | 19.74 |

| Location | shot density at 0-5 cm (shot/l) | shot density at 5-10 cm (shot/l) | shot density at 10-15 cm (shot/l) | shot density at 15-20 cm (shot/l) |
|---|---|---|---|---|
| SK-7 dup | 34.54 | 29.61 | 24.67 | 0.00 |
| SK-10 | 39.47 | 44.40 | 56.74 | 46.87 |
| SK-13 | 2.47 | 14.80 | 61.67 | 44.41 |
| SK-14 | 27.14 | 76.47 | 41.94 | 9.87 |
| SK-15 | 101.14 | 91.27 | 76.47 | 106.08 |
| SK-17 | 2.47 | 41.94 | 56.74 | 19.74 |
| SK-19 | 66.60 | 44.40 | 19.71 | 39.47 |
| SK-19 dup | 66.61 | 34.54 | 59.21 | 17.27 |
| SK-23 | 39.47 | 66.61 | 2.47 | 0.00 |
| SK-25 | 0.00 | 0.00 | 4.94 | 17.27 |
| SK-25 dup | 0.00 | 0.00 | 27.13 | 39.47 |

The data do not suggest that lead shot density increases consistently with depth. Please revise the quoted statement to indicate that there is no correlation between the density of lead shot and depth.

14. Section 3.1.2, Lead Shot, Page 45: The text states that the "increasing lead shot density with depth...support the finding from the sediment dynamics study that gradual sedimentation was occurring at the site," but since the data do not support the premise (see previous comment on the correlation of the lead shot density with depth), the conclusion is unwarranted. Further, the text in Section 3.1.3 suggests that clay fragments were transported (see the last sentence of

this section), so it is unclear why lead shot was not also transported. Please delete the conclusion that gradual burying is occurring at this site.

15. Section 4, Ecological Risk Assessment, and Appendix D: Probability Model Parameters Proposal: The TRVs selected as no effect and effect levels of lead shot have not been derived appropriately and may result in a substantial underestimate of lead shot toxicity and risks. Specific concerns include:

- The TRV derivation discounts a substantial number of studies showing high lead shot toxicity based on the assumption that there was inadequate protein and calcium in the diets. For example, the Report states that observations of adverse effects on ring-necked ducks in the field (Sanderson and Bellrose, 1986) indicated that the diet was low in protein and calcium. The assumption of inadequate diet is not a sufficient basis for ignoring studies showing high toxicity of lead shot. A more defensible evaluation is required, including consideration of the ducks' likely food source and potential protein and calcium content of the diet for each of the discounted studies. The TRV derivation also inappropriately discounted the study of Rattner (1989) because of an absence of nutritional information. Derivation of a TRV based only on the Sanderson (2002) study is not acceptable. The TRV derivation must use the studies of Mautino and Bell (1986) and Chasco et al. (1994) using birds fed natural diets; these studies demonstrate no effect levels of less than two shot. Exclusion of any studies must include additional justification, including a quantitative comparison of site diet nutrition data to study nutritional data (or likely protein and calcium content based on other studies).

- The selected TRV was based on Sanderson (2002), which did not include a control and only included one dose level of lead shot. This study is not adequate for deriving a TRV because all statistical analyses were based on comparison among birds dosed with lead shot.

17. Section 4, Ecological Risk Assessment, and Appendix D: Probability Model Parameters Proposal: The probability model is not adequate for assessing lead shot risks to waterfowl because it relies on a number of unsupported assumptions that may result in a substantial underestimation of exposure and risks to waterfowl. Specific concerns include:

- The probability of an individual bird encountering a lead shot particle ($p$) is based on a site wide weighted average grit and lead shot abundances as shown in Equation 2 on page D-2. Appendix A shows that grit and lead shot abundance is

extremely heterogeneous. For example, one surface sediment sample (AAE 550-A) shows a grit count of 106,917 grit and a shot count of 1, whereas another sample (AAE-557-A) shows a grit count of 10 and a shot count of 110 (Table A-4). Averaging across all areas of the site does not account for the heterogeneity of the site and the possibility of specific locations posing risks to birds that may result in population-level risks. See the comment below for a suggested alternative modeling approach to address population-level risks from heterogeneous contamination. The model should be revised to consider a heterogeneous distribution of shot and grit, including upper 95% confidence limit distributions of shot:grit ratios rather than weighted average values.

- The probability of a bird encountering a lead shot particle is also based on an assumed fraction of ingested grit that is $\geq$ 2 mm (Equation 2; p. D-2). The assumed size fraction ($f$ = 0.18) is not adequately supported and may substantially and inappropriately reduce the estimated exposure and risks.